



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

with it in the same way. I found that the pure salt did not interfere in any way with the digestive action of the fluid, and therefore the inference is that the pure salt is insoluble in the gastric fluid. An analysis was made of the fluid after it had been standing at 100° F. in contact with the pure chromate; no reaction indicating the presence of the salt could be obtained.

Prof. E. H. S. Bailey has since examined the commercial chrome yellow, and finds it to contain variable quantities of barium and calcium sulphate. The latter salt is sufficiently soluble to account for the above modified action of the digestive fluid.

Dr. Marshall, of Philadelphia, has made some physiological experiments upon dogs which lead him to believe that chrome yellow is decomposed by the muriatic acid of the stomach. The so-called poisonous property cannot be due to the solubility of the salt, but it might be accounted for by the gradual decomposition of the salt in the tissues, which retain considerable portions of the insoluble powder.

ON THE OCCURRENCE OF NITRITES IN RAIN-WATER.

BY PROF. G. H. FAILYER.

As a part of our work upon the nitrogen compounds occurring in rain-water we have tested qualitatively for nitrites, using the test proposed by Griess and modified by Warrington.* The test is almost too delicate to be used quantitatively, but in all cases we tried to grade the color produced by a purely artificial scale; such as faint, distinct, strong, very strong. In general, as might be expected, the depth of color produced varies inversely with the amount of rain, since the first portion of the fall would serve to wash the air, and any subsequent fall would only dilute the solution. But the amount of this has been quite variable, for extremely heavy rains have sometimes shown good reactions. This may be due to the production of nitrites during the shower, or, in a long-continued rain, the air being renewed at any one place may bring in fresh supplies of the salts.

To illustrate the results obtained, I give a summary for the year justclosed (Oct. 1886 to Sept. 1887, inclusive.)

<i>Month.</i>	<i>No. of rains...</i>	<i>No. giving reaction.....</i>	<i>No. giving no reaction..</i>	<i>Doubtful.....</i>
October.....	2	2	.....	.....
November.....	2	2	.....	.....
December.....	3	3	.....	.....
January.....	3	3	.....	.....
February.....	3	1	.....	2
March.....	6	.....	4	2
April.....	5	.....	2	3
May.....	8	8	.....	.....
June.....	10	7	2	1
July.....	12	12	.....	.....
August.....	7	7	.....	.....
September.....	8	4	2	2
.....	3	3	.....	.....
Total.....	69	49	10	10

It seems remarkable that so many of the rain-waters should show the presence of nitrites. It is equally remarkable that the winter months should be deficient in these compounds. Is it because oxidation is then at a minimum, or is it that reduc-

* See Journal of the London Chem. Soc. for May, 1881.

tion from nitrites is then at a minimum? On the other hand, it may be that this is merely accidental, and another year may show contrary results. When our observations have extended through a greater number of years we will be better prepared to discuss these interesting questions.

ULTRAMARINE BLUE IN SUGARS.

BY H. L. RAYMOND, PH. D.

There seems to be no end to the "fixed" or adulterated goods in the market, and sugar is no exception. It would seem with the late improvements in sugar-refining as if there would be no need of this. It is not sand to which we call the attention of this body of scientists, but bluing.

We find upon examination that the refiners are learning something from the washerwoman—whitening their sugars by means of a color, and that color ultramarine. In this bottle are six grains of the pigment, the amount found in three hundred grains of sugar. For many ordinary purposes this does not seem to have any deleterious effect, but to the pharmacist it causes both trouble and annoyance. Ultramarine is a sulpho-silicate of aluminium and sodium. The quantity used is small, but enough to impregnate fruit syrups and those containing free acid with sulphuretted hydrogen, thus imparting to them a very disagreeable taste and odor. Many a housekeeper can testify to the annoyance caused by this adulteration when she finds, upon opening a jar of fruit, that instead of the delicious fragrance expected, she is greeted by an odor familiar to unpopular orators. The acid of the fruit does the business.

Prussian blue is also used, but that has not shown any unpleasant effects. We suppose ultramarine blue is generally used because it is cheaper.

The presence of the latter is detected in several ways. The easiest test, if there appears to be a large quantity of the adulteration, is to dissolve one part of the suspected sugar in twenty parts of water, and allow the solution to stand. If there be any blue, it is shown by the bluish precipitate on the bottom.

By the use of the microscope, we may detect the presence of the ultramarine when the adulteration is much less, and on account of the peculiar crystals, which are readily distinguished.

Prof. Nichols, late of the State University, with the assistance of Prof. Franklin, has made some very interesting experiments with the spectroscope, which are of value to us on this subject. By this means, we can determine the presence of any coloring matter in sugar. It is shown by comparing a spectrum of a pigment, having a known white surface, with the polarized spectrum of the suspected sugar under precisely the same conditions.

(As a note, here would say that Prof. Nichols states that nearly every white substance in the market is made so by the use of blues: for example, carbonate and sulphate of magnesia, carbonate of lime, etc.)

From a number of samples bought at different stores, we find that twenty-four out of thirty-three contain ultramarine blue.

There is still another test, and easy to try: that is to add a few drops of acid to a solution of sugar. The olfactories will be the best judge as to the presence or absence of the adulterations. Anyone not acquainted with the delicate (?) odor of sulphuretted hydrogen, will be introduced with pleasure, at the close of the session.